AgriCos e-Newsletter
ISSN: 2582-7049
AgriCos e-Newsletter
Open Access Multidisciplinary Monthly Online Magazine
Volume: 03 Issue: 11 November 2022 Article No: 06

Black Wheat - A Boon to the Human Kind and Nature's Therapy for Cancer

Mehraj - Sofi
M.Sc. Research Scholar, Department of Agronomy, Agriculture University Jodhpur, Rajasthan

SUMMARY

In recent years, colored wheat has gained attention among farmers which has been developed at NABI by routine plant breeding method. Black wheat is one of them which are gaining importance among health conscious people due to its several health benefits. Morphologically it is similar to white wheat in all aspects except its grain color and nutritional composition. It is time to shift from high-yielding wheat to quality wheat, and biofortified colored wheat gives a new twist. When purple and blue wheat are crossed, the result is black wheat. It has immense biological value and can become health improving food supplement. Black wheat tastes similar to normal wheat but it has additional health benefits. The benefits are due to the colour-producing anthocyanins. Anthocyanins are anti-oxidants that prevent oxidative damage caused by free radicals and help in delaying ageing, reducing cancer, cardiovascular diseases, antidiabetic and other disorders. Anthocyanins also have a pre-biotic effect that keeps our gut bacteria happy, that in turn make human body healthier. It has ability to combat and address global and national challenge of malnutrition.

INTRODUCTION

Wheat (Triticum aestivum) is one of the oldest cereal cultivated and consumed from centuries. It ranks second both in area and production outmoded by rice. It is the second most stable crop covering an area of 29.8 mha in India. Zinc and iron are most deficient micronutrients in India. Zinc fortified colored wheat has good prospect to fight against one of the major challenging issue i.e. malnutrition. Malnutrition is the major problem in all age group of people especially among children. It occurs due to meager intake of proteins, vitamins, energy and micro-nutrients, which reduces the quality of life resulting from poor health. Advancement in the nutritional value of common wheat grains (amber) in color can address the major confrontation i.e. malnutrition. Normal wheat with supplemental anthocyanin (a phenolic compound) content results in colored wheat (purple, blue and black) which has been developed by National Agri-food Biotechnology Institute (NABI), Mohali, Punjab after seven years of research. Anthocyanin pigment is concentrated in the pericarp of wheat grain .It has got permission for human consumption by Food safety and standards authority of India (FSSAI) in June 2018 vides F.No.04/Std/PA/FSSAI/2018.

Bio-fortified black wheat has immense biological value and can become health improving food supplement. It can help in eliminating a major and universal problem with minor attention 'malnutrition' to some extent. The black wheat variety has been named 'Nabi MG' which is rich in zinc and iron content compared to normal wheat, thus indicating double bio-fortified lines (Sharma et al., 2018) which is expected to have significant effect on human health. Black wheat is a gluten free cereal which is rich in vitamin B complex, protein, dietary fibre and other nutrients like phosphorus, potassium, calcium, magnesium, manganese, selenium and copper. The polysaccharide and protein content of black wheat seeds are higher than that found in normal wheat (amber color seeds). Black wheat is supposed to have highest anthocyanin content among all colored lines, has around 60% more iron concentration and more nutritious than common wheat varieties. Anthocyanins are naturally occurring water soluble pigments which imparts red, orange, black, blue and purple color to the majority of dark fruits and vegetables depending upon the different concentration of anthocyanin. Anthocyanins are antioxidants which "neutralize" ROS (Reactive oxygen species), means it removes free radicals (having unstable electrons) from the body before they are able to react with the cellular components and change their function or structure. It has been estimated that on an average, 100 g of black wheat provides 71 g carbohydrates, 13 g protein, 10 g fiber and 3.40 g fat.

Advancement of Black Wheat in India

Black Wheat is not developed through genetic engineering. Seven years of long research in different seasons and regions to check its adaptability and yield potential to India's environmental conditions. It has been developed through normal plant breeding techniques. So, it is not harmful to our body at all. Wheat is no longer plain old brown in india thanks to eight-year-long research project by a group of scientists at Mohali's, National Agri-food Biotechnology Institute (NABI). Three colored varieties of wheat purple, black and blue -are ready fir human consumption after Food safety and standards authority of india (FSSAI) gave its node in June 2018. For this purpose, exotic germplasm (EC866732) procured from Japan was crossed with a normal high yielding and disease resistance wheat cultivar(PBW621) and after selection, black wheat was developed in India at NABI, Mohali under the leadership of pioneer scientist Dr. Monika Garg.

Position of black wheat in India

Farmers have started cultivating black wheat in several states of India including Punjab, Haryana, Uttar Pradesh, Maharashtra, Madhya Pradesh, Bihar and Chhattisgarh.. At present, Madhya Pradesh is the leading producer of common as well as black wheat. At present, seeds of black wheat are not available in the market but one can get it from NABI or farmers who have cultivated it in the previous season. But despite its lower availability and productivity than the normal wheat, it is able to fetch higher prices in the market (Rs. 100-120 kg-1) due to its multiple nutritional properties. Package and practices (POP's) of black wheat is similar to that of common wheat. It requires around 130-135 days to reach maturity and seeds are smaller in size. Prior sowing of black wheat, followed by 30-35 °C of harvest temperature results in better quality and color of grains. One can purchase its seeds from NABI at 100-120 Rs/kg.

Nutritional Properties of Black Wheat

Black wheat is a boon to human kind, especially for people suffering from stress, as researches revealed its effectiveness to tackle stress if added in our daily diet. This wheat is much more nutritious than ordinary wheat and in terms of quality, it is kept equal to the fruit called Blueberries.

Stress:

In today's time, almost every person is more or less suffering from stress. While medications left severe side effects in the body, black wheat has brought a ray of hope to end this terrible disease.

Obesity:

Research has found very encouraging results of black wheat in controlling obesity.

Cancer:

Cancer is a disease for which no permanent treatment has been available yet. At this time black wheat has emerged as a better option in the form of food supplements for all those people when no medicines are available to control this disease.

Diabetes :
The most spreading disease in India as well as across the globe, while the irony is that in spite of many expensive medicines, it's not curable. But, research has shown positive results on diabetes patients.

Hyper tension (Blood pressure)
Black wheat is a better food supplement which delays aging, can control high blood pressure and cholesterol levels.

Improves Digestive system
Black wheat chapattis help in relieving constipation and other diseases related to digestive problem.

Future Needs
• Research needs to be conducted on the pest and disease resistance capacity and its adaptability to became climate resilient.
• Central and state government should procure it at higher minimum support price (MSP) for introducing it as supplement in mid-day meals, under the mal nutrition removal POSHAN-ABHIYAN
• There is need to popularize the product by enhancing its availability in the market for general public.
• Good research and extension work is required for the development of high yielding and better performing strains.

CONCLUSION

All over the world, people eat a lot of wheat and wheat-based products. Colored wheat varieties, however, were well-suited for commercial product development, paving the way for their industrial use .Farmers can easily make more money by cultivating Black Wheat, which does not necessitate the use of complicated or rigorous farming methods. The consumption of foods based on Black Wheat would be an essential step towards alleviating proteinmal nutrition. Black wheat should be used/ added in National Nutrition Mission (NNM) or 'Poshan Abhiyaan' in improving the nutritional status of young children, adolescent girls and women. It has potential to tackle under-nutrition problem and meet the target of reducing it by 2% a year in the country and benefitting farmers by fetching higher prices of their output than the production cost. So, there is need for development, much more improvement and utilization of several such products with better nutritional and functional properties with added health benefits.

REFERENCES

Garg, M., Chawla, M., Chunduri, V., Kumar, R., Sharma, S., Sharma, N.K., Kaur, N., Kumar, A., Mundey, J.K., Saini, M. K., Singh, S. P., 2016. Transfer of grain colors to elite wheat cultivars and their characterization. *Journal of Cereal Science* 71, 138-144.

https://m.economictimes.com/news/economy/agriculture/has-india-found-the-answer-to-two-of-its-most-pressing-lifestyle-problems/articleshow/69612827.cms.

Mahalik, G., A Review on Usefulness and Nutritional Benefits of Black Wheat on Health System.

Petroni, K., Pilu, R., and Tonelli, C., 2014. Anthocyanins in corn: A wealth of genes for human health. Planta 240(5), 901-911.

Sharma, S., Chunduri, V., Kumar, A., Kumar, R., Khare, P., Kondepudi, K.K., Garg, M., 2018. Anthocyanin bio-fortified colored wheat: Nutritional and functional characterization. PloS one 13(4), e0194367.